# PREGNANCY OUTCOMES IN GRAND MULTIPAROUS WOMEN: DOES PARITY MATTER? A COMPARATIVE STUDY

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## ABSTRACT

**BACKGROUND:** Grand multiparity is still a common condition in developing countries. Although older literature showed the effect of grand multiparity on adverse pregnancy outcomes, recent reports fail to show clear evidence on the contribution of grand multiparity to adverse outcomes.

OBJECTIVE: This study aimed to compare maternal and perinatal outcomes in grand multiparous and low multiparous women in Southern Ethiopia.

**METHODS:** Comparative cross-sectional study design was employed from February to June 2018. Four hundred sixty-one (461) mothers were included in the study. Data were collected using structured interviewer-administered questionnaire and extracting from patient charts. Data were analyzed using STATA version 14. Descriptive and logistic regression analyses were computed. Statistically significant variables were declared at P-value less than 0.05.

**RESULTS:** A quarter (24.9%) (95% CI: 21.1%-29.1%) of the participants had at least one adverse perinatal outcome, while 39% (95% CI: 34.6%-43.5%) had adverse maternal outcomes. Anemia and cesarean delivery were the most frequently encountered maternal outcomes in grand and low multiparous women, respectively. Stillbirth was reported higher in grand multiparas. When adjusted for other socio-demographic and obstetric variables, parity did not show a statistically significant difference in both maternal and perinatal outcomes.

**CONCLUSION AND RECOMMENDATIONS:** Parity did not show a statistically significant difference in both adverse maternal and perinatal outcomes. Many adverse pregnancy outcomes were reported to be higher in grand multiparous women. Further longitudinal researches are needed to better elucidate this finding.

**KEYWORDS:** Maternal outcome, Perinatal outcome, Parity, South Ethiopia.

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## INTRODUCTION

Maternal mortality remained a public health challenge in developing nations even after a transition from millennium development to sustainable development era. Between 1990 and 2015 increased total fertility rate and net shift of birth to older women has been noted[1].

The term "grand multipara" was first introduced in 1934 as "the dangerous multiparas", the author noted steadily increased maternal death when parity increases[2]. The International Federation of Gynecology and Obstetrics (FIGO) defines grand multiparity as five or more live births and stillbirths after the age of viability[3]. The prevalence of grand multiparity ranged from 0.4% in some states of India to 26.5% in the Gambia[4,5].

Grand multiparity is a known risk factor for uterine rupture6 and uterine atony, one of the most common cause for postpartum hemorrhage[7]. Globally, more than 3.2 million stillbirths occurred each year. One of the risk factors for these deaths was grand multiparity[8]. However, some experts agreed that grand multiparity should not be discouraged as long as the necessary perinatal care is provided[9]. In Sub-Saharan Africa, grand multiparity increased the odds of maternal mortality and morbidities[10]. On the other hand, a large-scale retrospective study in Turkey showed, parity was not associated with face presentation[11]. Lower odds of maternal death were noted among grand multiparous women in Mali[12]. One preliminary study in Poland showed a significant risk of poor progress of labor and emergency cesarean section among primiparas in contrast to multiparas[13].

In Ethiopia, the probability of death during infancy is much greater among children born to mothers of high parity and short birth interval[14]. A prospective study in northern Ethiopia reported a 20% decrease in birth weight among male neonates born to grand multiparas[15]. The effect of parity is not consistent across studies. In addition, sufficient studies are not available which compare pregnancy outcomes across parity groups in Ethiopia. Thus, we aimed to investigate and compare pregnancy outcomes in grand and low multiparous women in southern Ethiopia.

## METHODS

### Study setting and period

The study was conducted in Adare General Hospital (AGH) and Hawassa University Comprehensive Specialized Hospital (HUCSH) from February 1 to June 30, 2018. Hawassa is a city in Ethiopia, on the shores of Lake Hawassa in the Great Rift Valley. It is the capital city of Southern Nations Nationalities and Peoples regional state and located 273 kilometers from Addis Ababa. Based on the 2007 census conducted by the central statistical agency (CSA) of Ethiopia, this town has a total population of 157,879.

### Study design and population

A comparative cross-sectional study design was employed to include multiparous women who gave birth in the study areas during the study period.

Eligibility criteria

All multiparas with a single fetus/neonate at a gestational age of ≥28 weeks were included in the study. Whereas, multiparas with twin gestation/delivery, mothers who were not able to respond were excluded from the study.

### Sample size determination

The sample size was computed using the following assumptions: power of the study (1-β) to be 80%, 95% confidence interval (CI), the estimated unexposed-to-exposed ratio to be 2:1 and percent of outcome among non-exposed group & odds ratio of a previous study (16) to get final sample size of 471 (157 grand multiparas and 314 low multiparas).

### Sampling procedure

Study subjects were identified during the time of admission to the labor ward. If eligible mothers were identified after delivery, registration books and patient charts, were checked for pre-partal conditions. The total average number of deliveries was estimated to be 762 per month in the two study hospitals. Proportional allocation of the sample size to each hospital. Thus, a sample of 255 (85 GM & 170 LM) and 216 (72 GM & 144 LM) were allocated to HUCSH and AGH respectively. Then, Starting from the day of data collection, two consecutive grand multiparas (GM) were interviewed and assessed for each low multiparous (LM) woman.

**Study variables**

The outcome/dependent variables were maternal and perinatal outcomes. Independent/exposure variables were socio-demographic variables (maternal age, residence, religion, ethnicity, marital status, education, income, and occupation), and antenatal profile and obstetric characteristics (parity, ANC visit, frequency of ANC visit, gestational age at first booking, past obstetric complications, past medical illness, previous mode of delivery, distance from health facility, contraceptive use and planned pregnancy).

**Operational definitions**

Low multiparity: ≥2-4 deliveries after 28 weeks of gestation.

Grand multiparity: ≥5 births after 28 weeks of gestation.

Maternal outcomes: at least one adverse obstetric outcomes of women like anemia, uterine rupture, admission to ICU, maternal death, diabetes mellitus, PROM, preterm labor, obstructed labor and oligohydramnios from admission to discharge from the hospital.

Perinatal outcomes: at least one adverse outcomes of the fetus/newborn (stillbirth, congenital malformation, macrosomia, low Apgar score, meconium aspiration syndrome and need for resuscitation) between 28 weeks of gestation and discharge from the hospital.

**Data collection tools and procedures**

Data were collected using structured interviewer-administered questionnaire and data extraction sheets from patient charts. The questionnaire, adapted from published works (9, 16, 17) was constructed within socio-demographic, obstetric and pregnancy outcome sections. Six diploma-holder and two BSc holder midwives were recruited as data collectors and supervisors, respectively. For mothers who had a normal delivery, data were collected 1-2 hours after delivery. Mothers who had cesarean or complicated vaginal delivery waited until they were fully awake to respond to the questions.

**Data quality control and analysis**

The investigator trained data collectors and supervisors for three days on the tool and data collection procedures. Pretest was done on 5% of the sample size in Yirgalem Hospital (a government affiliated hospital, 45 kilometers away from Hawassa). Finally, Amharic and Sidamic versions of the questionnaire were used to collect the data.

On each day of data collection, the supervisors and principal investigator checked the completeness of the data. Data were coded and entered to Epi-Data version 4.4.2.0 then exported to STATA version 14.0 for analysis. Univariable analysis and cross-tabulation of variables was done for the outcome and independent variables. Variables with a p-value at ≤0.25 (18) in the univariable analysis were included in the multivariable logistic regression analyses. Statistically significant variables were declared at P-value <0.05.

**Ethical considerations**

Institutional Review Board (IRB) of Hawassa University College of Medicine and Health Sciences approved this study [Ref. No: IRB/164/10]. Written consent was obtained from study participants. Confidentiality was also assured throughout the study.

## RESULTS

Socio-demographic characteristics of study participants

In this study, 461 questionnaires were completed, yielding a response rate of 97.8%. The mean (±SD) age of the respondents was 31.8 (±4.38) and 27.0 (±4.05) years for grand multiparous and low multiparous women, respectively. The majority of respondents, 89.1% and 63.6% low multipara and grand multiparous women respectively, were in the age group of 21 to 34 years. More than half (51.59%) of the grand multiparous women reside in rural areas. [Table 1].

**Table 1 Socio-demographic characteristics of respondents in HUCSH & AGH, Southern Ethiopia September 2018**

| Variables | Parity n (%) | |
|---|---|---|
| | Low multipara (304) | Grand multipara (157) |
| Maternal age | | |
| ≤20 | 13 (4.28) | 0 (0.00) |
| 21-34 | 271 (89.14) | 100 (63.69) |
| >34 | 20 (6.58) | 57 (36.31) |
| Place of residence | | |
| Rural | 63 (20.72) | 81 (51.59) |
| Urban | 241 (79.28) | 76 (48.41) |
| Religion | | |
| Protestant | 177 (58.22) | 90 (57.32) |
| Orthodox | 79 (25.99) | 18 (11.46) |
| Muslim | 46 (15.13) | 49 (31.21) |
| Others+ | 2 (0.66) 0 (0.00) | 1 (0.64) |
| Ethnicity | | |
| SNNP | 197 (64.80) | 96 (61.15) |
| Amhara | 35 (11.51) | 10 (6.37) |
| Oromo | 69 (22.70) | 50 (31.85) |
| Others† | 3 (0.99) | 1 (0.64) |
| Marital status | | |
| Married | 299 (98.36) | 156 (99.36) |
| Others++ | 5 (1.64) | 1 (0.64) |
| Mothers' education | | |
| None | 34 (11.18) | 76 (48.41) |
| Read and write only | 15 (4.93) | 24 (15.29) |
| Primary | 119 (39.14) | 38 (24.20) |
| Secondary | 67 (22.04) | 9 (5.73) |
| College and above | 69 (22.70) | 10 (6.37) |
| Mothers' occupation | | |
| House-wife | 172 (56.58) | 122 (77.71) |
| Gov't employee | 72 (23.68) | 8 (5.10) |
| self-employed | 60 (19.74) | 27 (17.20) |
| Income (Ethiopian Birr) | | |
| Lower tertile | 91 (29.93) | 72 (45.86) |
| Middle tertile | 96 (31.58) | 55 (35.03) |
| Upper tertile | 117 (38.49) | 30 (19.11) |
| Husband education | | |
| None | 18 (5.92) | 41 (26.11) |
| Read and write only | 22 (7.24) | 25 (15.92) |
| Primary | 80 (26.32) | 45 (28.66) |
| Secondary | 72 (23.68) | 23 (14.65) |
| College and above | 112 (36.84) | 23 (14.65) |
| Husband occupation | | |
| Farmer | 76 (25.00) | 91 (57.96) |
| Gov't employee | 111 (36.51) | 27 (17.20) |
| Self-employed | 117 (38.49) | 39 (24.84) |

+catholic; †Tigre++single, widowed & divorced

Obstetric profile of study participants

The mean (±SD) gestational age was 38.48 (±2.40) and 38.96 (±2.01) weeks for grand and low multiparas, respectively. Of the two-study group of participants, abortion, intrauterine fetal demise (IUFD) and risk of cesarean delivery were the most frequently encountered

conditions previously. The majority (92.7%) of participants in the low multipara group had ANC visits [Table 2].

**Table 2 Obstetric profile of participants in HUCSH & AGH, Southern Ethiopia September 2018**

| Variables | Parity n (%) | |
|---|---|---|
| | Low multipara (304) | Grand multipara (157) |
| Past obstetric complications | | |
| Yes | 96 (31.58) | 65 (41.40) |
| No | 208 (68.42) | 92 (58.60) |
| Type of complications | | |
| Abortion | 47 (48.96) | 31 (47.69) |
| IUFD | 24 (25.00) | 25 (38.46) |
| Preterm delivery | 2 (2.08) | 2 (3.08) |
| Instrumental delivery | 1 (1.04) | 2 (3.08) |
| Cesarean section | 26 (27.08) | 8 (12.31) |
| Neonatal death | 4 (4.17) | 8 (12.13) |
| Others+ | 6 (6.25) | 3 (4.63) |
| Previous medical illnesses | | |
| Yes | 16 (5.26) | 17 (10.83) |
| No | 288 (94.74) | 140 (89.17) |
| ANC visit† | | |
| Yes | 282 (92.76) | 124 (78.98) |
| No | 22 (7.24) | 33 (21.02) |
| GA at first booking | | |
| ≤16 weeks | 100 (35.46) | 34 (27.42) |
| >16 weeks | 182 (64.54) | 90 (72.58) |
| Number of ANC visit | | |
| 1-3 | 70 (24.82) | 60 (48.39) |
| ≥4 | 212 (75.18) | 64 (51.61) |
| Place of last delivery | | |
| Home | 44 (14.47) | 83 (52.87) |
| HI | 260 (85.53) | 74 (47.13) |
| Mode of delivery (before this birth) | | |
| Vaginal | 262 (86.18) | 149 (94.90) |
| Cesarean section | 42 (13.82) | 8 (5.10) |
| Distance from the nearest health facility | | |
| <15 min | 39 (12.83) | 21 (13.38) |
| 15-30 min | 72 (23.68) | 24 (15.29) |
| >30 min | 193 (63.49) | 112 (71.34) |
| Contraceptive use | | |
| Yes | 211 (69.41) | 91 (57.96) |
| No | 93 (30.59) | 66 (42.04) |
| Type of family planning | | |
| Injectable | 143 (67.77) | 64 (70.33) |
| Implant | 29 (13.74) | 12 (13.19) |
| OCPs | 33 (15.64) | 8 (8.79) |
| IUCD | 3 (1.42) | 1 (1.10) |
| Natural method | 3 (1.42) | 6 (6.59) |
| Planned pregnancy | | |
| Yes | 266 (87.50) | 65 (41.40) |
| No | 38 (12.50) | 92 (58.60) |

+congenital malformation, ectopic pregnancy; †at least one; IUFD intra-uterine fetal demise;
GA gestational age; HI health institution

**Adverse pregnancy outcomes**

The prevalence of adverse maternal outcomes was 39.0% (95% CI: 34.6%, 43.5%) [Table 3]. A higher proportion of mothers in the grand multiparous group develop maternal complications than low multiparas (45.2% vs 35.8%). Many complications were reported higher in the grand multiparous women, compared to low multiparas. However, cesarean delivery, induction/augmentation, prolonged pregnancy and CPD/obstructed labor were higher in low multiparous women. [Table 4].

The prevalence of adverse perinatal outcomes was 24.9% (95% CI: 21.1%, 29.1%) [Table 3]. More grand multiparas had perinatal complications than low multiparas (34.3% vs 20%). Stillbirth, low Apgar score and congenital malformations frequently occurred complications in grand multiparas. Nevertheless, meconium aspiration, need for resuscitation and macrosomia were higher in low multiparous women [Table 4].

**Table 3 Pregnancy outcomes in low and grand multiparous women in HUCSH & AGH, Southern Ethiopia September 2018**

| Outcomes (n=461) | Parity n (%) | | Total n (%) | P-value |
|---|---|---|---|---|
| | Low multipara | Grand multipara | | |
| Adverse maternal outcome* | | | | |
| Yes | 109 (35.86) | 71 (45.22) | 180 (39.05) | 0.05 |
| No | 195 (64.14) | 86 (54.78) | 281 (60.95) | |
| Adverse perinatal outcome ** | | | | |
| Yes | 61 (20.07) | 54 (34.39) | 115 (24.95) | 0.001 |
| No | 243 (79.93) | 103 (65.61) | 346 (75.05) | |

*composite of all maternal outcomes; ** composite of all perinatal outcomes.

**Table 4 Adverse pregnancy outcomes in HUCSH and AGH, 2018**

| Complications | LM n (%) | GM (%) | Total (%) |
|---|---|---|---|
| **Antepartum outcomes** | | | |
| Diabetes mellitus | 2 (2.20) | 0 (0) | 2 (1.35) |
| PROM | 10 (10.99) | 9 (15.79) | 19 (12.84) |
| Preterm labor | 12 (13.19) | 13 (22.81) | 25 (16.89) |
| APH | 5 (5.49) | 11 (19.30) | 16 (10.81) |
| Preeclampsia/gestational hypertension | 18 (19.81) | 13 (22.81) | 31 (20.95) |
| Anemia | 0 (0.00) | 2 (3.51) | 2 (1.35) |
| Posterm delivery | 26 (28.57) | 12 (21.04) | 38 (25.68) |
| Oligohydramnios | 8 (8.79) | 8 (14.04) | 16 (10.81) |
| Eclampsia | 6 (6.59) | 8(14.04) | 14 (9.46) |
| Others* | 3 (3.30) | 3 (5.26) | 6 (4.05) |
| **Intrapartum outcomes** | | | |
| Hypertensive disorders | 2 (4.35) | 3 (7.89) | 5 (5.95) |
| Malpresentation | 4 (4.40) | 3 (5.26) | 7 (4.73) |
| APH | 1 (2.17) | 1 (2.63) | 2 (2.38) |
| Induction/augmentation | 19 (41.30) | 11 (28.95) | 30 (35.71) |
| Cesarean delivery | 45 (49.45) | 19 (33.33) | 64 (43.24) |
| Uterine rupture | 1 (2.17) | 5 (13.16) | 6 (7.14) |
| PPH | 6 (13.04) | 7 (18.42) | 13 (15.48) |
| Anemia | 6 (13.04) | 13 (34.21) | 19 (22.62) |
| Blood transfusion | 1 (2.17) | 8 (21.05) | 9 (10.71) |
| CPD/obstructed labor | 7 (15.22) | 4 (10.53) | 11 (13.10) |
| Renal dysfunction | 0 (0.00) | 1 (10.53) | 1 (1.19) |
| Maternal sepsis | 1 (2.17) | 1 (2.63) | 2 (2.38) |
| Maternal death | 0 (0.00 | 1 (2.63) | 1 (1.19) |
| TAH | 8 (17.39) | 5 (13.19) | 13 (15.48) |
| NRFS | 4 (8.70) | 7 (18.42) | 11 (13.10) |
| **Perinatal outcomes** | | | |
| Stillborn | 15 (24.59) | 21 (38.89) | 36 (31.30) |
| Early neonatal death | 1 (1.64) | 1 (1.85) | 2 (1.74) |
| Congenital malformation | 1 (1.64) | 2 (3.70) | 3 (2.61) |
| Meconium aspiration syndrome | 6 (9.84) | 2 (3.70) | 8 (6.96) |
| Need for resuscitation | 9 (14.75) | 3 (5.56) | 12 (10.43) |
| Admitted to neonatal ICU | 24 (39.34) | 20 (37.04) | 44 (38.26) |
| Low Apgar score | 22 (36.07) | 28 (51.85) | 50 (43.48) |
| Low birthweight | 21 (34.43) | 22 (40.74) | 43 (37.39) |
| Macrosomia | 14 (22.95) | 4 (7.41) | 18 (15.65) |

All variables in the graph have multiple responses; APH antepartum hemorrhage; GM grand multipara; LM low multipara; PPH postpartum hemorrhage; CPD Cephalo-pelvic disproportion; NRFS non-reassuring fetal status; PROM premature rupture of membranes; TAH total abdominal hysterectomy; *others include urinary tract infections, cord prolapse, bladder rupture, and pancytopenia

Logistic regression for adverse pregnancy outcomes

When adjusted for other socio-demographic and obstetric factors, parity did not show a statistically significant difference in maternal outcomes (AOR: 0.74; 95% CI: 0.20, 2.63). Other variables (educational status, income, previous medical illnesses & mode of delivery, birth weight and Apgar score) showed a significant association [Table 5].

Similarly, parity was not found to be a statistically significant factor for adverse perinatal outcomes (AOR: 1.23; 95% CI: 0.70, 2.15). However, number of ANC visits and place of last delivery showed a significant association [Table 5].

**Table 5 Association of parity and adverse pregnancy outcomes in HUCSH & AGH, 2018**

| Parity | Adverse maternal outcome | Adverse perinatal outcome | | |
|---|---|---|---|---|
| | COR (95% CI) | AOR* (95% CI) | COR (95% CI) | AOR** (95% CI) |
| Grand multipara | 1.47 (0.99, 2.18) | 0.74 (0.20, 2.63) | 2.08 (1.35,3.21) | 1.23 (0.70, 2.15) |
| Low multipara | Reference | Reference | Reference | Reference |

*adjusted for maternal age, place of residence, mothers' education, mothers occupation, income, husband education, husband occupation, total live birth, past obstetric complications, previous medical illnesses, number of prenatal visits, place of last delivery, mode of last delivery, distance from nearest health facility, contraceptive use, planned pregnancy, birth weight and Apgar score

**adjusted for place of residence, mothers' education, income, husband occupation, previous medical illnesses, number of prenatal visits, place of last delivery, mode of last delivery and newborn sex

## DISCUSSION

To date, the association between grand multiparity and adverse pregnancy outcomes is not conclusive[9]. In this study, many complications were reported higher in grand multiparous women than low multiparas. On the other hand, cesarean delivery, obstructed labor, induction/augmentation, and macrosomia reported higher in the low multiparous group. The findings of the present study are similar with studies conducted in Tanzania, Uganda, Nigeria and Mali[12,16,19,20]. This finding was consistent with a study in Saudi women, except a higher cesarean delivery rate among grand multiparas in the previous study[9]. Another cohort study was in line with the present finding, where the risk of anemia was higher in grand multiparas21. Similarly, in Oman, low birth weight cases were higher in low parity women, but higher macrosomia cases were reported in women of high parity[22]. A similar comparative study in Saudi Arabia reported higher preterm delivery and cesarean section rates in grand multiparous women and PROM was higher and low multiparas[23]. The differences in incidences of obstetric complications could be explained by the epidemiologic characteristics of the complications to different study areas. Moreover, this study uses a composite of different complications. Many complications, which were reported higher in grand multiparous women, may indicate the need for meticulous care to these mothers during pregnancy and delivery.

In the current study, there was no statistically significant difference in pregnancy outcomes between grand multiparous and low multiparous women. This finding was consistent with different epidemiologic studies. A prospective study in Oman showed, absence of significant association in parity and diabetes[24]. Similarly, the absence of significant association noted between high parity and anemia in a cohort study[21]. Another study added the insignificant increase of maternal and neonatal complications in grand multiparous women[9]. As parity increases, a decline in risk of stillbirth was noted in rural Uganda[25].

Similarly, a retrospective analysis in Italy revealed the protective effect of number of previous pregnancies for unfavorable maternal outcomes[26]. A cohort study in Oman reported the protective effect of grand multiparity for low birth weight[22]. Similarly, a comparative prospective cohort study in Uganda concluded there was no difference in fetal outcomes among grand multiparas and low multiparous women[19]. A systematic review and meta-analysis also revealed grand multiparity was not associated with increased risk of pregnancy outcomes

(low birth weight and preterm delivery[27]. Moreover, a large-scale retrospective study in Turkey showed, parity was not associated with face presentation[11]. Lower odds of maternal death were noted among grand multiparous women in Mali[12].

On the contrary, grand multiparity was found to be significantly associated with complications during pregnancy, at delivery and poor fetal outcome[3,16,20]. Higher odds of placental abnormalities, perinatal mortality and high low birth weight were reported in Mali[12]. Additionally, a comparative study in Saudi Arabia reported a significant association between grand multiparity and pregnancy outcomes (cesarean delivery, fetal macrosomia, diabetes mellitus, and pregnancy-induced hypertension)[23]. Moreover, a significant association between grand multiparity and stillbirth was noted in one Nigerian finding[28]. Evidence from a cross-sectional study showed multiparity was associated with diabetes mellitus in Hispanic women[29]. A 37-year follow-up study in Israel showed the association of parity and mortality risk of mothers[30]. Similarly, grand multiparous women were at risk of death and uterine rupture in Cameroonian and Ethiopian studies,[31,32] respectively. Maternal anemia was also linked with grand multiparity in DR Congo[33].

In modern settings with favorable socioeconomic and prenatal accesses, lower incidences of adverse pregnancy outcomes can be anticipated in all parity groups[34]. Many large-scale recent works of the literature showed absence of significant difference in pregnancy outcomes between grand and low multiparous women. Likewise, this finding is in line with many recent literatures. However, old and some recent articles reported a significant difference in adverse outcomes for these groups. These differences might be due to differences in study design, sample size (under-power), possible confounders (adverse outcomes attributable to advanced maternal age)9 and other methodological issues. Furthermore, adverse outcomes in the previous studies might be attributed to low health service utilization of grand multiparas[17,35]. Additionally, accessible and quality antenatal care differences in study subjects could explain this. Thus, universal and meticulous prenatal care for all mothers and special care for high-risk groups may prevent adverse pregnancy outcomes.

This study has certain limitations. Due to the insufficient count of cases, it was not possible to examine each specific pregnancy outcome, separately with parity. Recall bias on previous obstetric characteristics was the limitation of this study. Moreover, other confounders like nutritional status and inter-pregnancy/birth interval were not considered in this study. As institutional delivery is low in our setting, interpretation of this finding should be made cautiously.

## CONCLUSION AND RECOMMENDATIONS

Even though they are not statistically significant, many adverse pregnancy outcomes were reported higher in grand multiparous women. When adjusted for other demographic and obstetric variables, parity did not show a statistically significant difference in both adverse maternal and perinatal outcomes. Classifying grand multiparous women as 'high-risk' might not be exclusively due to high parity. Giving attention to grand multiparous women would have a paramount effect on the prevention of adverse pregnancy complications. Furthermore, longitudinal studies are recommended to investigate pregnancy outcome differences in both group of women.

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